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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,378	01/05/2006	Pieter Gijsman	4662-123	4400

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EXAMINER	
NGUYEN, VU ANH	
ART UNIT	PAPER NUMBER
1796	
MAIL DATE	DELIVERY MODE
12/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/563,378	GIJSMAN ET AL.	
	Examiner	Art Unit	
	Vu Nguyen	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 16-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 16-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Acknowledgment is made of applicant's amendment to the claims, wherein claims 1, 4, 6, 7, and 9-12 have been amended; claim 15 has been cancelled. Claims 1-14 and 16-20 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tung et al. (US 2003/0027912) in view of Presenz et al. (US 2003/0091823) with evidential support from Tomihashi et al. (WO 00/58414). *Notes: U.S. Pat. 6,734,236 is being used as an equivalent of WO 00/58414.*

5. Corresponding to the limitations set forth in these claims, Tung et al. (Tung, hereafter) teaches a process for preparing a composition used to mold to form bottles [0039-0040], said process comprising preparing a masterbatch comprising a thermoplastic resin and iron particles followed by melt-blending the masterbatch with the base resin [0033 & 0070]. The iron particles have a plurality of sizes, ranging from 1 micron to 75 microns (Tables 1-2). The thermoplastic resin comprises polyamides such as nylon 6, nylon 66, nylon 612 and a host of others [0016]. It is noted that nylon 6 is normally a crystalline polyamide having a melting point over 200^{o}C. The amount of the iron particles is 50-2,500 ppm by weight of the resin (Abstract); that is, 0.005-0.25 wt%. However, the amount of iron particles "may be much higher" if haze is not a concerned [0035].

6. It is clear that Tung teaches all the limitations set forth in these claims but (1) fails to teach a non-metallic fibrous reinforcing agent and (2) uses the iron powders as oxygen scavenger, not thermal stabilizer.

7. Presenz et al. (Presenz, hereafter) teaches a method for producing a polyamide molding compound for use in manufacturing bottles [0001-0003, 0019-0020], said method comprising preparing a polyamide polymer in the form of granulate, which is then compounded with an oxygen scavenger such as carboxylic acid salts of iron, cobalt or nickel [0020]. It is also disclosed that the compound can be reinforced with glass fiber if applications in vehicle optics, household appliance, and electrical and electronics components are desired [0019].

8. In light of such teachings, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have included glass fiber in the process taught by Tung so that the process is not limited to just packaging bottles but also to components in vehicle optics, household appliance, and electrical and electronics industries.

9. Even though Tung employs iron particles as oxygen scavenger, they inherently also function as heat stabilizer since such function of iron particles is well known in the art as disclosed by, for example, Tomihashi et al., which teaches a thermally stabilized resin composition comprising a fluorine-containing resin and 0.5-3 wt% of stabilizers that include iron powder (col. 3, lines 18-35; col. 4, lines 62-64; col. 5, lines 1-10).

10. Claims 1-2, 5-14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkawa et al. (US 4,891,399) in view of Martens et al. (US 6,350,802).

11. Regarding the limitations set forth in these claims, Ohkawa et al. (Ohkawa, hereafter) teaches a process for preparing a molding composition comprising melt-mixing (col. 12, line 66) a thermoplastic polymer, glass fibers and carbon fibers (Abstract), and metal powder having particle size of 0.4-10 μm (col. 6, lines 10-12 and 21-24). The composition comprises 2-70 parts of a thermoplastic polymer and 98-30 parts of a mixture of glass fibers, metal powder, inorganic fillers, and other additives (col. 2, lines 63-68; col. 6, lines 35; col. 7, lines 1-3). The weight ratio of the metal powder and the fibrous filler (i.e., glass fiber) is 2:1 to 20:1 (col. 6 & 7, bridging

paragraph). Since the disclosed thermoplastic polymer (col. 4, lines 11-25) includes homopolymers such as PA-6 and since no phase separation is mentioned, the disclosed thermoplastic polymer is expected to form a continuous phase. Although the prior art is silent as to the crystallinity of the polymer or its melting or glass-transition temperature, it is reasonable to expect that the disclosed thermoplastic polymers include those exhibiting the properties recited in claim 5 because, for example, PA-6 is normally a crystalline polymer with a melting point over 200^{o}C. In the disclosed process, the metal powder is thoroughly mixed with the melting thermoplastic polymer (col. 12, line 66). The iron powder is, therefore, expected to be finely dispersed in the polymer matrix. The metal powder, which includes iron, zinc, and copper (col. 1, line 38; col. 6, lines 10-20), is used to enhance the heat stability of the composition, among other purposes (col. 1, Compare the 3rd and 4th paragraphs). That is, the metal powder is employed as heat stabilizer. The composition further includes a filler (col. 9, lines 43-66) and/or other additives (col. 10, lines 1-5). The thermoplastic polymer includes a number of well-known polyamides such as PA-6, PA-12, PA-6,6, PA-6,10, PA-6,12, and aliphatic, aromatic, and semi-aromatic polyamides (col. 4, lines 11-25). The prior art is silent as to an HDT value or a tensile strength/elongation test for the disclosed polymers. It is noted that the HDT values can change, depending on the testing conditions (e.g., pressure). Even though the prior art is silent on the recited properties, the disclosed invention is directed to a thermoplastic composition having improved heat resistance and dimensional stability (col. 1, lines 28). Moreover, the prior art does not specify a limit on the types of polyamide resins employed in the disclosed invention.

Consequently, unless shown otherwise, it is reasonable to expect the disclosed thermoplastic polymers to include those having the properties recited in claims 10 and 11. Ohkawa teaches that the disclosed composition is "suitable for molding various shaped articles used in a wide variety of applications including, for example, structural parts in electric and electronic instruments, industrial machines and transportation machines such as automobiles as well as furnitures and other household commodities" (col. 1, lines 9-15). Numerous other specific applications of the disclosed composition are taught (col. 10, lines 19-42).

12. Clearly, Ohkawa teaches all the limitations set forth in these claims except that, compared to the claimed composition, the disclosed composition has higher content of iron powder and lower concentration of fibrous reinforcing agent.

13. Martens et al. (Martens, hereafter) teaches a thermally stable and flame retardant polyamide molding composition comprising 20-78% of a polyamide having a melting point of 280-340^{o}C, 10-60% inorganic filler, 10-35% flame retardant, 1-10% of one or more oxides, hydroxides, or salts of weak mineral acids, and 0-2% heat stabilizer (Abstract). The polyamide includes PA 6T/66 (col. 2, line 10). The inorganic filler includes non-metallic reinforcing fibers such as glass fiber and carbon fiber (col. 2, lines 43-47). The heat stabilizer includes a "variety of organic and inorganic common heat stabilizers" (Footnote of Table 1). It is further disclosed that **[Motivations]** "one of the major commercial problems with flame retarded high temperature nylon is thermal instability in normal processing (molding) conditions. This leads to heavy mold deposit, plugging of the mold vent and corrosion of the mold. Typical heat stabilizers that would

be used in non-flame retardant products do not help this situation. Surprisingly, it has been discovered that when adding oxides or hydroxides, or salts of weak mineral acids the thermal stability of the product increases dramatically with and without normal heat stabilizers such as halogen compounds." (col. 1, lines 18-29).

14. One skilled in the art would know that the amounts of the metallic fillers and the non-metallic fibrous reinforcing agents (such as glass fibers) in a molding composition should be determined in consideration of the type of applications. If a composition contains high content of a metallic filler but low concentration of a fibrous reinforcing agent, the heat stability of the resultant molded articles may be improved but their impact strength is low. Further, a high content of metal filler in a resin would make processing very difficult. Additionally, Ohkawa teaches that the disclosed composition "can give not only shaped articles having complicated configuration as molded but also shaped articles suitable for secondary work-ing to meet various applications **by adequately modifying the blending ratio of the components**" (col. 10, lines 23-28. Emphasis added).

15. In light of the teachings by Martens and Ohkawa, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified the process taught by Ohkawa by increasing the content of the non-metallic fibrous reinforcing agent to about 10-60% and lowering the content of the metal powder while adding a small amount of oxides or hydroxides, or salts of weak mineral acids so that not only is impact strength improved but a high degree of thermal stability can be

obtained at a relatively low concentration of the thermal stabilizer while the processibility is improved due to a reduction in the content of the metal powder.

Response to Arguments

16. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection. Further, Applicant's assertion that nothing in Ohkawa "is said about the influence of the metallic filler on thermal stability of the polymer" (p. 7) is not true since Ohkawa teaches that the use of the metal powder is an attempt to improve the heat stability and dimensional stability of the thermoplastic resin (col. 1, lines 24-39). Also disclosed in the cited section is that zinc, copper, and iron are equivalent in terms of the just-mentioned functions. Thus, applicant's assertion that "Cu and Fe are not mentioned as alternatives in view of thermal stabilization" (p. 8) is not true.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vu Nguyen whose telephone number is (571)270-5454. The examiner can normally be reached on M-F 7:30-5:00 (Alternating Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Vu Nguyen
Examiner
Art Unit 1796

/James J. Seidleck/

Supervisory Patent Examiner, Art Unit 1796